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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,045	02/13/2004	Nobuji Kishimoto	S-2446.01/Div	3913

7590 05/07/2008  
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EXAMINER
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CHO, JENNIFER Y

ART UNIT	PAPER NUMBER
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1621

MAIL DATE	DELIVERY MODE
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05/07/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/777,045	<b>Applicant(s)</b> KISHIMOTO ET AL.	
	<b>Examiner</b> JENNIFER Y. CHO	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-15 and 22-27 is/are pending in the application.
- 4a) Of the above claim(s) 22-24, 26 and 27 (in part) is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-10, 13-15, 25 and 27 (in part) is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/13/04</u> .   | 6) <input type="checkbox"/> Other: _____                          |

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 9-15, 25 and 27 (in part), drawn to a process for producing unsaturated aldehydes and acids, using the following catalyst:  $MnE^l E^2O_x$ , classified in class 562, subclass various.
- II. Claims 22-23 and 27 (in part), drawn to a process for producing unsaturated aldehydes and acids, using the following catalyst:  $Mo_a Bi_b Fe_c A_d B_e C_f D_g O_x$ , classified in class 562, subclass various.
- III. Claims 24, 26 and 27 (in part), drawn to a process for producing unsaturated aldehydes and acids, using the following catalyst:  $Mo_h V_i W_j E_k F_l G_m H_n O_x$ , classified in class 562, subclass various.

Groups I, II and III, and permutations of, are directed to related processes. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed can have a materially different design, mode of operation, function, or effect. The processes are drawn to patentably distinct catalysts, which do not overlap in scope.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given

above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

**Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.**

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement

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will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

During a telephone conversation with Jay Spiegel on 5/2/08 a provisional election was made with traverse to prosecute the invention of Group I, claims 9-15, 25 and 27 (in part). Affirmation of this election must be made by applicant in replying to this Office action. Claims 22-24, 26 and 27 (in part) are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### **Detailed Action**

This office action is in response to Applicant's communication filed on 2/7/08.

Claims 9-15, 22-27 are pending in this application. Claims 22-24, 26 and 27 (in part) are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### **Priority Document**

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in JAPAN on 5/18/1998. It is noted, however, that applicant has not filed a certified copy of the 135,420/98 application as required by 35 U.S.C. 119(b).

### **IDS**

The information disclosure statement (IDS) filed on 2/13/04 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

### **Claim Rejections - 35 USC 103**

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 9-10, 13-15, 25 and 27 (in part) are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlaefer et al. (US 4,078,044).

The instant claims are drawn to a process for producing unsaturated aldehydes and unsaturated acids by the vapor phase oxidative dehydrogenation of C2 to C5 alkenes with molecular oxygen by using an oxidative dehydrogenation catalyst with a multimetal mixed oxide as described in claim 1.

Schlaefer et al. teaches a process for producing unsaturated aldehydes and unsaturated acids by the vapor phase oxidative dehydrogenation of lower alkenes with molecular oxygen by using an oxidative dehydrogenation catalyst with a multimetal mixed oxide with the components  $Sb_{1-99}Mn_{1-50}O_x$  (abstract; column 1, lines 9-14; column 2, lines 47-52; column 5, line 14; column 16, lines 13-14). The temperature

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range of the reaction is from 350°C to about 500°C (column 6, lines 7-10) and the catalyst can be supported on a variety of inorganic carriers (column 4, lines 1-17).

Schlaefer et al. is deficient in the sense that it does not exemplify Applicant's catalyst. Schlaefer et al. is also silent as to the drying temperature and the space velocity.

However, it would be prima facie obvious to one of ordinary skill in the art at the time of the invention, to determine the appropriate drying temperature, the space velocity and to use Schlaefer et al.'s multimetal mixed oxide for the oxidative dehydrogenation process. One of ordinary skill in the art would be motivated to optimize the process and to select a particular multimetal mixed oxide catalyst from the generic teachings of Schlaefer et al. with the reasonable expectation of success in obtaining the particular reaction products, that is, unsaturated aldehydes and acids. Absent any showing of unusual and/or unexpected results over Applicant's particular drying temperature and space velocity, the art obtains the same effect on the process steps. The expected result would be the efficient production of unsaturated aldehydes and unsaturated acids for the chemical industry.

Claims 9-15, 25 and 27 (in part) are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlaefer et al. (US 4,078,044), in view of Croce et al. (US 3,937,746).

The instant claims are drawn to a process for producing unsaturated aldehydes and unsaturated acids by the vapor phase oxidative dehydrogenation of C2 to C5



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alkenes with molecular oxygen by using an oxidative dehydrogenation catalyst with a multimetal mixed oxide as described in claim 1.

Schlaefer et al. teaches a process for producing unsaturated aldehydes and unsaturated acids by the vapor phase oxidative dehydrogenation of lower alkenes with molecular oxygen by using an oxidative dehydrogenation catalyst with a multimetal mixed oxide with the components  $\text{Sb}_{1-99}\text{Mn}_{1-50}\text{O}_x$ . (abstract; column 1, lines 9-14; column 2, lines 47-52; column 5, line 14; column 16, lines 13-14). The temperature range of the reaction is from 350°C to about 500°C (column 6, lines 7-10) and the catalyst can be supported on a variety of inorganic carriers (column 4, lines 1-17).

Schlaefer et al. is deficient in the sense that it does not explicitly state the addition of sulfate to the mixed metal oxide.

Croce et al. teaches that the yield of oxidative dehydrogenation reactions are improved, specifically of alkenes and aldehydes (column 2, line 56-61), by using a sulfur promoter as part of the catalyst (abstract). The sulfur can be incorporated in the form of sulfate (column 1, lines 40-41).

Therefore, it would be prima facie obvious to one of ordinary skill in the art at the time of the invention, to add Croce et al.'s sulfate promoter to Schlaefer et al.'s catalyst for the oxidative dehydrogenation process. One of ordinary skill in the art would be motivated to add sulfate to the catalyst, with the reasonable expectation that the purity would increase. Absent any showing of unusual and/or unexpected results over Applicant's particular sulfate catalyst, the art obtains the same effect on the process

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steps and yield. The expected result would be the efficient production of unsaturated aldehydes and unsaturated acids for the chemical industry.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Y. Cho whose telephone number is (571) 272 6246. The examiner can normally be reached on 9 AM - 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 272 0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer Cho  
Patent Examiner  
Art Unit: 1621

/Porfirio Nazario-Gonzalez/

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